

**DESCRIPTION****PANEL FOR SHUTTER****Technical field**

The present invention concerns a panel for shutter  
5 that integrates in the category of panels formed by  
profiles successively juxtaposed with the respective  
longitudinal axes defining a plane, profiles that are  
destined to be fixed in a frame containing that plane and  
provided with an exterior and an interior face, all or at  
10 least some of them additionally provided with transversal  
openings that develop longitudinally along at least a  
portion of the length of said profiles, openings that place  
the interior faces of the profiles in communication with  
the correspondent exterior faces.

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Within the scope of this invention the term shutter  
must be understood in its widest sense, thus comprising any  
elements destined to place outside (or inside) windows or  
doors - or any other openings - in buildings or  
20 constructions, either of residential character or not, to  
protect such doors, windows or openings and intercept the  
passage of light and air between the exterior and interior  
thereof.

25 In particular, the invention may concern stationary  
shutters or shutters that open and close, in this case with  
no restriction regarding the way to operate them, which may  
be, namely, sliding shutters or hinged shutters (named  
casement windows), of one or two folds.

Likewise in what concerns the materials, since, although this invention, as will be verified later on, is particularly suited to be implemented using aluminium profiles - which places it, above all, in the field of the aluminium framework - may also be implemented in other materials, namely in PVC (polyvinyl chloride) or even in wood.

#### 10 State of the art

There are in the market several shutters, namely of aluminium, whose panels are formed on the basis of slats or blades.

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Among these stand out the traditional shutters of the type Venetian blind, constituted by a succession of blades of horizontal longitudinal axe disposed one above the other, forming breaches between themselves disposed obliquely in the descending direction. These breaches allow, in a certain degree, the passage of air and light.

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Examples of such a type of shutters may be found for example in CH594802.

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In certain models existing in the market it is possible to control the passage of light and air through the regulation of the degree of inclination of the blades. Thus, approaching the plane of the blades to the horizontal, the passage of light and air is increased, and, approaching the plane of the blades to the vertical, the passage of light and air is decreased.

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An example may be found in CH613489.

Besides the shutters of the Venetian type, are also known shutters in which the panels are constituted by  
5 vertical or horizontal slats or profiles in closed modules.

In some cases the blades may be provided with openings for passage of light and air.

10 An example may be found in US5957186.

Except for the aforementioned case of certain shutters of the Venetian type that allow the regulation of the entrance of air and light, in the other cases of  
15 shutters made on the basis of blades or profiles such regulation is not foreseen.

In the case of the shutters of the Venetian type in which such regulation is possible, are highlighted the  
20 following inconveniences: difficulty of cleaning; fragility of the shutter, owing to the fact that the blades are independent; easiness of intrusion or, at least, of forced acquisition - from the exterior - of a position of the lamellas that allows the visualisation into the interior;  
25 easiness of deregulation or jamming of the regulation mechanism of the controllable blades; as well as early creation of exaggerated plays because of the functioning, originating, namely, noises.

30 The present invention has precisely the objective of reducing or eliminating that type of inconveniences.

Besides these and other objectives that will be identified spontaneously from the reading of the remaining description, in the panels accordingly to the invention is intended a bigger efficiency in security, a control of  
5 light and air, easiness of cleaning and maintenance, allowing its combined use with the traditional series of profiles of framework in what concerns the supporting peripheral frame, as well as its suitability to the implementation in diverse materials, namely in aluminium  
10 and PVC, all of this associated to a modern and attractive design.

As supplementary objective, it is intended that, preferably, the profiles constituting the panel according  
15 to the invention be obtained from profiles susceptible of being produced by extrusion procedures.

#### **Description of the invention**

20 The panel according to the invention is characterised in that:

- 25 - the contiguous profiles that constitute it are transversally slotted from one side to the other along the plane defined by the longitudinal axes of such profiles, or another one parallel to it, the slots developing longitudinally along at least a portion of the length of the said profiles and in correspondence with the openings that place the  
30 interior faces of the profiles in communication with the correspondent exterior faces;
- the panel comprises, besides the said profiles, at least a plate provided with openings parallel

between themselves and disposed in correspondence (total or partial) with the said openings existing in at least a portion of the length of the set of the respective profiles, plate that is introduced  
5 through the said slots existing in that portion of the length of the profiles;

- that(those) plate(s) being able to translate in the mentioned plane, through of referred correspondent slots, in order to assume at least  
10 two distinct positions, one position of correspondence between its openings and the correspondent openings of the profiles - allowing the passage of light and air - and another of lack (total or at least partial) of correspondence  
15 between such openings - preventing, at least partially, the passage of light and air through the said openings of the profiles.

20 Preferably, the profiles are tubular, case in which, also preferably, such profiles are provided with internal walls that, together with the walls provided with the referred interior and exterior faces, define the tubular chambers, those internal walls being connected to the other  
25 walls not by the extremes of these, but from further back, allowing these to prolong on one of the sides by short edges and on the other side by longer edges. In this case, and still preferably, the openings of the profiles develop along the longer edges and the mentioned slots develop  
30 along the referred internal walls, those internal walls being substantially slopped, at least in the part comprised between the slots and the cited exterior face.

According to the invention are also provided means of guidance and attachment of the mentioned plate as well as means to operate it, namely from the zone adjacent to the interior face of the panel.

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#### **Brief description of the drawings**

The enclosed drawings, presented as non restrictive examples, illustrate the panel in question.

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With that mere purpose of exemplifying, the drawings refer to the case of a panel in which the profiles are disposed horizontally and in which the movement of the plate is vertical, said profiles being shaped in a tubular manner.

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Fig. 1 presents a cut of the horizontal profiles that form the panel, having inside the plate with openings that functions vertically inside the profiles, to allow the regulation of the shutting and opening of light and air.

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Fig. 2 presents, above, one of the profiles of the panel with the partial opening of 1/3 width, following, below, the cut that shows the plate with partial openings and the respective accessories that allow the control of shutting and opening of light and air, namely the lateral caps for limitation and guidance, of nylon, the central knob or handle and the lateral springs, of stainless steel, that, bearing in mind the lateral grooves that are worked in the plate, allow its parking in various positions of shutting and opening of light and air.

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Fig. 3 presents, in partial cut, the panel with the plate in its interior in the position of total opening.

Fig. 4 presents, in partial cut, the panel with the plate in its interior in the semi-open position, to obtain medium light and ventilation, maintaining the state of privacy, not allowing visualising into the interior of the dwelling.

Fig. 5 presents, in partial cut, the panel with the plate in its interior in the totally shut position.

Fig. 6 presents, in enlarged view, a detail, in cut, of the linking area of two profiles, with the plate going through them, the plate being in the position of figure 4.

Fig. 7 presents, in cut, a profile.

#### Particular form of embodiment

Hereunder is a more detailed description of the invention, based on the mentioned figures, where the various elements expressly referenced therein are the following:

1 - Profiles;

11 - Interior faces of the profiles;

12 - Exterior faces of the profiles;

13 - Interior walls of the profiles;

101 - Transversal openings of the profiles, perpendicular to the plane of the panel;

102 - Transversal slots of the profiles, parallel to the plane of the panel;

- 103 - Slot in the wall correspondent to the interior face in a profile;
- 2 - Plate;
- 21 - Recesses of the plate, for attachment;
- 5 201 - Openings of the plate;
- 3 - Panel;
- 4 - Caps;
- 41 - Slots for guidance of the plate, in the caps;
- 10 5 - Means of attachment;
- 51 - Springs;
- 6 - Handle.

15 Accordingly to a particular way of embodiment of the invention, we have a new type of panels (3) for shutters, namely in aluminium or in PVC, constituted by horizontal profiles (1) with partial openings (101) of approximately 1/3 the length of the profiles, for entrance of light and ventilation, having a new system for regulation of shutting and opening of the light and of the ventilation, which consists of a plate (2) with openings (201) that functions in the vertical inside the horizontal profiles of the panels with the specific accessories created for that purpose.

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Details of functioning and of assembly:

After the cut in length, the horizontal profiles (1) are previously worked to create the openings (101) of passage of light and the slots (102) for passage of the central plate (2) - these carved in the internal walls (13) - as well as, in the case of one of the profiles, the

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creation of the vertical slot (103). Afterwards, are applied to the profiles the respective accessories: the caps (4) for limitation and guidance - provided with guides (41) - the means of attachment (5), provided with springs (51), and the base for the knob or handle (6).

Is then initiated the assembly of the panel which consists of the fitting/ranging by coupling of the various horizontal profiles that compose the panel. After they are all mounted and attached, is done the introduction of the plate (2) which is previously worked with openings (201) aligned in relation to the openings (101) of the panel and lateral grooves or recesses (21) that, with the support of the springs (51), already placed in the panel, will allow the parking of the plate in the three positions, open, semi-open and closed, or, alternatively, the parking in continuous in any position in which it is left, with additional attachment (through the cited springs or equivalent means) in the position of totally closed.

After the fitting of the plate (2) is applied the handle (6) that limits the maximum range of the movement of the plate - movement that is guided by the caps (4), namely due to the correspondent slots (41) for guidance - and that allows the manual regulation of the opening positions, the panel being ready to be fitted in the peripheral frame, built conventionally, preferably with recourse to one of the conventional series of aluminium or PVC profiles existing in the market.